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Federal Communication Commission

Dear Commissioners,

I am writing to you to express me great concern over the NOI contained in ET Docket 03-104. This is in regards to rulemaking concerning the possible deployment of Broadband over Power Line technology.

I have been an amateur radio operator and shortwave listener for over 30 years (since about age 10). When I was a kid, shortwave listening and amateur radio expanded my mind and pointed me on a path to my future career. I have been an Electrical/Software Engineer for nearly 28 years and I owe this career direction to my adolescent years spent operating and experimenting with amateur radio. This is a very common story for many of the engineers here in Silicon Valley, California.

The first thing that gets most young people interested in amateur radio is often the opportunity to communicate all over the globe via HF radio. Eventually, many of these amateurs move on to careers in engineering, education, and public service. Many of these amateurs eventually become the backbone of backup emergency communications network through the country and the world. HF communications are the cornerstone of amateur radio. The history of amateur radio starts with HF communications and this continues to be its lifeblood.

HF amateur radio, shortwave listening, radio astronomy, and a whole host of other radio services are in grave danger from BPL technology. Power line noise is already a major problem in most urban and/or suburban areas. In my area, I experience local noise levels on HF at least 30db greater than is found a mile or so outside of town. The influx of electronic "gadgetry" in modern cities continues to increase HF noise levels all the time. In addition, many power lines are not maintained adequately to eliminate spurious RF emissions. These types of noise sources on HF will pale in comparison to BPL technology. Simple mathematical computations based on FCC allowable power levels make it clear that BPL has the potential to increase the level of noise by another 30db, effectively eliminating HF amateur communications in my area.

Placing a broadband signal on a power line will inevitably cause undesirable radiation through the entire community. Power lines were never meant to be broadband transmission lines. Their potential for acting like very large HF antennas is staggering. A BPL signal is not like a simple point source of RF emissions (such as a television, cordless phone, wireless router, etc.), but rather it will radiate throughout the community in a fashion much more similar to that of a lightning bolt. BPL will raise the ambient noise level on HF to a level that will completely preclude weak signal HF communications. Amateur radio HF communications will become impossible everywhere that BPL is deployed.

I am a huge fan of broadband communications and therefore I strongly support the FCC's desire to increase availability of broadband communications, but BPL is not the right way to accomplish this. I applauded the FCC's efforts to deregulate the industry and to allow cable, dsl, and fixed wireless internet providers to deploy broadband. I also applauded the FCC's efforts to pre-empt

city zoning departments and private land use interests from prohibiting the installation of external television antennas. All of these were positive things for consumers and had no negative effect on existing users of the radio spectrum. BPL/PLC is VERY different. BPL/PLC is not just another competing technology. BPL/PLC has the potential to cause widespread interference to legitimate users of HF spectrum.

The FCC is attempting to do this in order to fill a perceived hole in broadband distribution. We all know that there are many homes and communities not yet served by DSL or Cable. Clearly, BPL/PLC has an attraction for those communities as well as for the power companies that serve to make large profits from this technology. It is easy to see why this is so attractive. Unfortunately, there is a dark side to this technology.

We already have multiple broadband communication mechanisms that can be deployed which do not disrupt HF communications as BPL does. I happen to have DSL at my home and would not want to go back to the days of slow speed dialup connections. However, there are alternatives available such as cable modems, fixed wireless, ad-hoc 802.11 networks, and satellite. None of these current broadband technologies radiate in a way that would render nearby radio stations impotent, but BPL would. BPL is the only proposed broadband technology with the potential to cause widespread interference to legitimate users of radio spectrum, and as such the feasibility of this technology must be scrutinized very carefully. This is why I am urging you to not allow widespread access deployment of BPL. "Once the camel's nose is under the tent...". Once the door to BPL has been opened and HF communications of all kinds are disrupted, it will be difficult or impossible to reverse. This is why I urge you to not allow BPL deployment until this problem is solved. I urge the FCC to do extensive, thorough testing of BPL/PLC technology in the presence of other radio users (amateur radio, radio astronomy, etc.) and not allow this technology to be deployed until it can be proven that it will not cause harmful interference to other users of the radio spectrum.

In section 2 of the FCC's NOI, the FCC asks whether changes should be made to facilitate deployment of this technology. The answer to this question is an emphatic NO. In fact, it is my belief that the FCC should instead amend its rules to make it clear that the existing unintentional radiating limits of Part 15 are not applicable to devices that employ large scale transmission lines that can radiate these signals across large areas of the community. The FCC should make the rules tougher for this technology due to the strong probability of causing harmful interference.

In section 4 of the FCC's NOI, the FCC talks about the fact that carrier current techniques have been used for some time. Clearly, all of these techniques were localized and interference could be dealt with on an individual basis. In spite of this, there are still problems with many of these "localized radiators". Imagine how bad this will be when the "radiator" is no longer "localized", but rather is emitting radiation over a wide area over transmission lines never intended for this purpose. The duty cycles and bandwidths of most of these "localized" systems were low enough that they rarely caused any interference to legitimate HF communication systems. I wish to point out that widespread deployment of access BPL technology is a big departure from these old types of systems since it is far more widespread, intentionally uses the entire power grid from transmission (instead of just a single residence), has a much larger duty cycle (than, for instance remote reading of power meters), and has a much larger bandwidth and potentially much higher signal levels. Access BPL is not

the same thing as these old systems. The negative effects of BPL/PLC are too great to allow its deployment.

In section 20 the FCC asks whether transmission lines containing BPL transmissions should be considered Class A (commercial) or Class B (residential). The answer to this is Class B (assuming these BPL transmissions are allowed at all) since these power lines will be located and/or terminated in residential neighborhoods.

Sections 21 through 23 discuss testing methods for these types of devices. Based on all of the analysis I have seen, it would appear to be practically impossible to deploy a BPL/PLC system without interfering with other users of the HF frequency bands. Because of this, I consider these two sections rather moot. However, assuming it was not moot I would say that testing should involve a worst case analysis since there will be worst cases in the field. Test would have to involve worst case transmission lines, worst case insulators, and worst case proximity to other services. Using the typical "extrapolation" method whereby radiated RF is measured near the transmission line and "extrapolated" to the 30 meter requirement is normally considered an invalid test. Clearly, it is possible for power companies with power lines stretching for miles around to run tests based on actual distances (like 30 meters) rather than using extrapolations. Doing so should be a requirement due to the high likelihood of interference created by these types of systems. I would recommend that this types of test be considered completely invalid, especially for BPL/PLC testing. BPL/PLC tests should be done before full deployment and must prove beyond a shadow of a doubt that they will not cause interference to nearby radio communication systems. Individual home installations should be subject to testing when the FCC is informed of interference to a neighbor by a BPL/PLC or homeplug device.

If-and-only-if it can be proven beyond a shadow of a doubt that this technology causes no more interference to other users of the HF radio spectrum than competing broadband technologies should this technology be allowed. I urge you to do more testing and to include amateur radio testing in the process. I urge you to work closely with the Amateur Radio Relay League (ARRL) to thoroughly test this technology before allowing deployment. It is vital that we not allow any new technology to completely destroy the radio spectrum for other legitimate users.

In summary, I support the FCC's goal of deploying broadband communications to more and more homes/businesses in the United States, BUT I am strongly opposed to the deployment of BPL on the grounds that it unnecessarily disrupts radio communications of other legitimate radio spectrum users. There are numerous broadband technologies available today; enough different technologies that there is no need to deploy a technology that will cause so much great harm. Please don't allow this technology to be deployed and please honor your promise to protect other legitimate radio spectrum users from unintentional radiators such as this.

Sincerely,

Kelly G. Johnson